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EXAMINER

POLYZOS, FAYE S

ART UNIT	PAPER NUMBER
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2884

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/777,454

Applicant(s)

BEEKMAN, FREDERIK
JOHANNES

Examiner

Faye Polyzos

Art Unit

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-95 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,35-36,44-48,55 and 73-78 is/are rejected.
- 7) ☒ Claim(s) 3-34,37-43,49-54,56-72 and 79-95 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/12/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date, _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: the specification does not include appropriate section headings.
2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

3. Appropriate correction is required.

Claim Objections

4. Claims 26-34 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The dependency of claim 26 is not disclosed providing improper dependencies of the following claims 27-34.

5. Claims 3,12,14,35,59,66,68,74 and 91-94 are objected to because of the following informalities: improper spelling of term "neighbouring" corrected to "neighboring". Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 35-36, 44-48 and 55 are rejected under 35 U.S.C. 102(e) as being anticipated by *Zeng et al (US 2003/0111609 A1)*.

Regarding claim 35, Zeng discloses an apparatus for obtaining a tomographic image of an object (i.e. patient, animal), using radioactive radiation, which apparatus

comprises a measuring cavity which may have an axial axis (70), a cavity wall (30) which may at least partly surround the measuring cavity which may have an axial axis. A cavity wall which may at least partly surround the measuring cavity which cavity wall is provided with a plurality of pinholes, the apparatus further comprising detection means which viewed from the measuring cavity, are provided behind the pin holes of radioactive radiation emitted within the measuring cavity wherein the detection means can be read electronically or optically (Figs. 1 and 11 and paragraphs [0036], [0066] and [0069]), wherein the detection means (22) comprise of a plurality of substantially flat detectors (106) wherein an edge directed in the direction of the axial axis of at least one of the detectors wherein an edge directed in the direction of the axial axis of at least one of the detectors is adjacent to a selectable portion of a neighboring detector the portion being directed in the direction of the axial axis and being directed to the measuring cavity so that the diameter of a cavity formed by the detectors can be varied by selecting the distance between the portion of the neighboring wall detector and an edge directed in the direction of the axial axis of the neighboring detector.

Regarding claim 36, Zeng discloses the cavity wall (30) is of a rotational symmetrical design around the axial axis of the measuring cavity (70) (See Generally Fig. 1).

Regarding claim 44, Zeng discloses an apparatus for obtaining a tomographic image of an object (i.e. patient, animal), using radioactive radiation, which apparatus comprises a measuring cavity which may have an axial axis (70), a cavity wall (30) which may at least partly surround the measuring cavity which may have an axial axis.

A cavity wall which may at least partly surround the measuring cavity which cavity wall is provided with a plurality of pinholes, the apparatus further comprising detection means which viewed from the measuring cavity, are provided behind the pin holes of radioactive radiation emitted within the measuring cavity wherein the detection means can be read electronically or optically (Figs. 1 and 11 and paragraphs [0036], [0066] and [0069]), wherein the apparatus is further provided with radiation blocking means (300) which partly block radiation which travels from the measuring cavity through at least one of the pinholes to the detection means such that the radiation which is detected by the detection means lays in a limited solid angle relative to the at least one pinhole, which angle is smaller than the solid angle which would have been obtained without the radiation blocking means (See Generally Fig. 11 and paragraph [0069]).

Regarding claim 45, Zeng discloses the detection means (22) comprises a detector array (106) wherein the radiation blocking means (300) are arranged such that each detector array only receives radiation coming from one of the pinholes (See Generally Fig. 11 and [0069]).

Regarding claims 46-48, Zeng discloses the radiation blocking means (300) comprises baffles located inside the measuring cavity adjacent to the cavity wall (See Generally Fig. 11).

Regarding claim 55, Zeng discloses the radiation blocking means (300) comprise a blocking wall extending between the cavity wall and the detection means wherein the blocking wall comprises a plurality of openings for providing a passage for the radiation

from the pinholes (104) to the detection means (22) laying within the limited solid angle (See Generally Fig. 11).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-2 and 73-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Genna et al* (US 5,021,667) and *Zeng et al* (US 2003/0111609 A1).

Regarding claim 1, Zeng discloses a method of obtaining a tomographic image or part of an object (i.e. patient, animal), using radioactive radiation, wherein the object is at least partly placed into a measuring cavity (30) having an axial axis (70), the measuring cavity being at least partially surrounded by a cavity wall which is provided with a plurality of pinholes (104n) (i.e. slits or gaps), and wherein behind the pin holes detection means are placed, radioactive radiation from a radioactive isotope (i.e. radiopharmaceuticals or radioisotopes) administered to the object is detected in a position-related manner by the detection means and data obtained with the detection means are used for the generation of the tomographic image (Figs. 1 and 11 and paragraphs [0036], [0066] and [0069]). Zeng does not specifically disclose of the pinhole arrangement and pitch. Genna discloses the pinholes (38)(40)(42) (i.e. openings) are at least substantially arranged along a helix wherein the pitch of the helix is generally smaller than the distance between neighboring pinholes laying on the helix

(See Generally Figs. 1 and 2 and col. 5, lines 8-26 and lines 53-60). Genna teaches openings (i.e. pinholes) passing through the wall (22) are relatively widely spaced to readily enable the camera to correlate a detected event with a particular hole location. The unique arrangement of pattern (28) enables a large array of camera images to be generated from relatively few number of openings and the openings or holes are aligned along oblique line (88) which is transverse to the orientation of the rows (col. 5, lines 53-68 and col. 6, lines 1-4). Therefore, it would have been obvious to modify the apparatus suggested by Zeng to incorporate pinholes in a helix arrangement, as disclosed supra by Genna, to allow for a more versatile apparatus.

Regarding claim 2, Zeng discloses an apparatus for obtaining a tomographic image of an object (i.e. patient, animal), using radioactive radiation, which apparatus comprises a measuring cavity having an axial axis (70), a cavity wall (30) which at least partly surrounds the measuring cavity which cavity wall is provided with a plurality of pinholes (104n) (i.e. slits or gaps), the apparatus further comprising detection means (22) which view from the cavity, are provided behind the pin holes (104n), wherein the detection means are arranged for receiving, in a position-related manner, the radioactive radiation emitted within the measuring cavity and wherein the detection means can be read electronically or optically (Figs. 1 and 11 and paragraphs [0036], [0066] and [0069]). Zeng does not specifically disclose of the pinhole arrangement and pitch. Genna discloses the pinholes (38)(40)(42) (i.e. openings) are at least substantially arranged along a helix wherein the pitch of the helix is generally smaller than the distance between neighboring pinholes laying on the helix (See Generally Figs.

1 and 2 and col. 5, lines 8-26 and lines 53-60). Genna teaches openings (i.e. pinholes) passing through the wall (22) are relatively widely spaced to readily enable the camera to correlate a detected event with a particular hole location. The unique arrangement of pattern (28) enables a large array of camera images to be generated from relatively few number of openings and the openings or holes are aligned along oblique line (88) which is transverse to the orientation of the rows (col. 5, lines 53-68 and col. 6, lines 1-4). Therefore, it would have been obvious to modify the apparatus suggested by Zeng to incorporate pinholes in a helix arrangement, as disclosed supra by Genna, to allow for a more versatile apparatus.

Regarding claim 73, Zeng discloses a method of obtaining a tomographic image or part of an object (i.e. patient, animal), using radioactive radiation, wherein the object is at least partly placed into a measuring cavity (30), the measuring cavity possess a wall which is provided with a plurality of pinholes (104n) (i.e. slits or gaps), behind the pinholes detection means are placed, radioactive radiation from a radioactive isotope (i.e. radiopharmaceuticals or radioisotopes) administered to the object is detected in a position-dependent manner by the detection means, and data obtained with the detection means are used for the generation of the tomographic image (Figs. 1 and 11 and paragraphs [0036], [0066] and [0069]). Zeng does not specifically disclose of the array of pinhole arrangement on the measuring cavity. Genna discloses a measuring cavity comprising an array of pinholes (38)(40)(42) (i.e. openings), wherein an arbitrary first pinhole P1 is substantially axial direction in relation thereto has a nearest neighboring pinhole P2, and in a substantially transversal direction has a nearest

neighboring third pinhole P3, the axial component of the distance between the first and second pinholes P1 and P2, respectively, being smaller than the transversal component of the distance between the first and third pinholes P1 and P3, respectively, and in that means are provided between the first and third pinhole P_i radiation reaches any detection means other than detection means (See Generally Figs. 1 and 2 and col. 6, lines 24-37). Genna teaches array (10) can be accomplished by pattern (28a), pattern is equivalent to a pattern derived by placing parallel lines along a single oblique line and the corresponding line segments are continuous. Pattern (28a) can also be arranged in a number of columns, such as columns 100a, 102a, which are aligned with the axis of rotation (See Generally Fig. 6 and col. 6, lines 24-37). Therefore, it would have been obvious to modify the method suggested by Zeng to incorporate a pinhole array arrangement on the measuring cavity, as disclosed supra by Genna, to allow for a more versatile method and apparatus.

Regarding claim 74, Zeng discloses an apparatus for obtaining a tomographic image of an object (i.e. patient, animal), using apparatus comprises a measuring cavity provided with a plurality of pinholes (104n) (i.e. slits or gaps), the measuring cavity being arranged to at least partly surrounding the object, where, detection means are provided in the pin holes, where the detection means are suitable for in a position-dependent manner detecting radioactive radiation and the detection means can be read electronically or optically (Figs. 1 and 11 and paragraphs [0036], [0066] and [0069]). Zeng does not specifically disclose of the array of pinhole arrangement on the measuring cavity. Genna discloses a wall of the measuring cavity possesses an array

of pinholes, where the axial component of the distance between two in axial direction neighboring pinholes is smaller than the transversal component of the distance between two neighboring pinholes located in transversal component of the distance between two neighboring pinhole located in transversal direction with respect to the axial direction, in that a pinhole P1 has a maximum angle of incidence α_i with respect to the normal and a detection means Di located behind the pinhole, and in that means are provided to limit the chance that via pinhole Pi radiation reaches any detection means D other than detection means Di Genna teaches array (10) can be accomplished by pattern (28a), pattern is equivalent to a pattern derived by placing parallel lines along a single oblique line and the corresponding line segments are continuous. Pattern (28a) can also be arranged in a number of columns, such as columns 100a, 102a, which are aligned with the axis of rotation (See Generally Fig. 6 and col. 6, lines 24-37). Therefore, it would have been obvious to modify the method suggested by Zeng to incorporate a pinhole array arrangement on the measuring cavity, as disclosed supra by Genna, to allow for a more versatile method and apparatus.

Regarding claims 75-77, Zeng discloses the apparatus wherein the means comprise baffles (300) oriented towards the lumen of the measuring cavity and mounted on, around, or up against the surface of the detection means (See Generally Figs. 1 and 11).

Regarding claim 78, Zeng discloses the apparatus wherein the baffles are provided with projecting elements having a direction component parallel to the surface of the detection means (See Generally Fig. 11).

Allowable Subject Matter

10. Claims 3-25, 37-43, 49-54, 56-72 and 79-95 are objected to as being dependent upon a rejected based claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

Regarding dependent claim 3, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein, pinholes arranged in a plurality of flat planes, distance between neighboring planes is at least 1.03, at least 1.05, at least 1.3, more specifically at least 2, preferably at least 5 or more preferably at least 10 times smaller than the distance between neighboring pinholes within any of such planes; or the pitch of the helix is generally at least 1.03, at least 1.05, at least 1.3, more specifically at least 2, preferably at least 5 or more preferably at least 10 times smaller than the distance between neighboring pinholes laying along the helix.

Regarding dependent claims 4-5, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the cylinder shaped cavity wall, provided with a plurality of pinholes arranged in a plurality of flat planes, is of a rotationally symmetrical design around the axial axis of the measuring cavity.

Regarding dependent claims 6-7, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the cavity wall has a polygonal cross section, comprising n angles (n greater than or equal to 3), in a direction perpendicular to the axial axis.

Regarding dependent claims 8-10, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the cavity wall comprises a number of at least substantially flat rectangular shaped wall segments having the pinholes.

Regarding dependent claim 11, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the pinholes that are located relatively close to the ribs of the polygonal measuring cavity are at an angle to the normal of the wall segment, thereby pointing in the direction of the axial axis.

Regarding dependent claim 12, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the distance between two neighboring pinholes laying in one of the planes or on said helix and laying relatively close to one of the ribs of the polygonal measuring cavity is greater than the distance between two neighboring pinholes laying in the one of the planes or on the helix and laying substantially in the middle between two adjacent ribs.

Regarding dependent claim 13, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein respective pinholes situated nearer the axial axis ends of the measuring cavity are at an angle to the normals of the wall segment near the respective pinholes thereby at least substantially pointing in the direction of the absolute center of the measuring cavity or in the direction of a line segment at least substantially extending through the absolute center of the measuring cavity in the direction of the axial axis wherein the line segment is substantially shorter

than the length of the measuring cavity in the direction of the axial axis, for example shorter than 50% of the length of the measuring cavity in the direction of the axial axis.

Regarding dependent claim 14, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein an edge directed in the axial direction of at least one of the wall segments is adjacent to a selectable portion of a neighboring wall segment the portion being directed in the direction of the axial axis and being directed to the measuring cavity so that the diameter of the measuring cavity can be varied by selecting the distance between the portion of the neighboring wall segment and that the detection means comprises a plurality of substantially flat detectors wherein an edge directed in the direction of the axial axis of at least one of the detectors is adjacent to a selectable portion of a neighboring detector the portion being directed in the direction of the axial axis and being directed to the measuring cavity so that the diameter of a cavity formed by the detectors can be varied by selecting the distance between the portion of the neighboring wall detector and an edge directed in the direction of the axial axis of the neighboring detector.

Regarding dependent claim 15, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein radiation blocking means which partly block radiation which travels from the measuring cavity through at least one of the pinholes to the detection means such that the radiation which is detected by the detection means lays in a limited solid angle relative to the at least one pinhole, which angle is smaller than the solid angle which would have been obtained without the radiation blocking means.

Regarding dependent claim 16, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the radiation blocking means are arranged such that each detection array only receives radiation coming from one of the pinholes.

Regarding dependent claims 17-19, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the radiation blocking means comprise baffles, located inside the measuring cavity adjacent to the cavity wall.

Regarding dependent claims 20-21, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the baffles are located outside the measuring cavity, between the cavity wall and the detection means.

Regarding dependent claims 22-23, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the baffles, each lay substantially in a plane through the axial axis, are adjacent the detection means.

Regarding dependent claims 24-25, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the baffles each lay substantially in a plane through the axial axis and are provided with projecting elements having a direction component parallel to a surface of the detection means.

Regarding dependent claims 37-39, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the cavity wall, comprises n wall segment and/or that the detection means comprises n detectors, has a polygonal cross section, comprises n angles (n greater than or equal to 3), in a direction perpendicular to the axial axis.

Regarding dependent claim 40, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein pinholes that are located nearer the ribs of the polygonal measuring cavity are at an angle to the normal of the wall segment in the direction of the axial axis.

Regarding dependent claim 41, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein pinholes laying substantial in a plane perpendicular to the axial axis and being near one of the ribs of the polygonal measuring cavity are spaced further apart than pinholes laying substantial in the plane perpendicular to the axial axis and laying substantial in the middle between two adjacent ribs.

Regarding dependent claims 42-43, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein pinholes situated relatively close to the axial axis ends of the measuring cavity are at an angle to the normal of the wall segment, having a rectangular shape, in the direction of the absolute centre of the measuring cavity.

Regarding dependent claims 49-52, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the baffles are located outside the measuring cavity between the cavity wall and the detection means and adjacent to the detection means.

Regarding dependent claim 53, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the baffles each lay substantially in a plane through the axial axis.

Regarding dependent claims 54, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the baffles are provided with projecting elements having a direction component parallel to the surface of the detection means.

Regarding dependent claims 56, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the openings of the blocking wall have a surface which is greater than the surface of the pinholes.

Regarding dependent claims 57, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the openings of the blocking wall corresponds with one of the pinholes such that the radiation which passes through one of the openings comes from a single one of the pinholes.

Regarding dependent claims 58-59, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the blocking wall, has a shape which is substantially similar to the shape of the wall of the measuring cavity, comprising at least substantially flat segments having the openings wherein an edge directed in the axial direction of at least one of the wall segments is adjacent to a selectable portion of a neighboring wall segment the portion being directed in the direction of the axial axis and being directed to the measuring cavity so that the diameter of a space which is at least partly surrounded by the blocking wall and which space comprises the measuring cavity can be varied by selecting the distance between the portion of the neighboring wall segment and an edge directed in the direction of the axial axis of the neighboring wall segment.

Regarding dependent claims 60-62, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the blocking wall is of a rotationally symmetrical design around the axial axis of the measuring cavity and has a polygonal cross section, comprises n angles (n greater than or equal to 3), in a direction perpendicular to the axial axis,

Regarding dependent claims 63-64, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the blocking wall comprises n wall segments and/or that the detection means comprises n detectors wherein the measuring cavity has a polygonal cross section in a direction perpendicular to the axial axis and the cavity wall comprises at least substantially flat wall segments having the pinholes.

Regarding dependent claim 65, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein pinholes that are located nearer the ribs of the polygonal measuring cavity are at an angle to the normal of the wall segment in the direction of the axial axis.

Regarding dependent claim 66, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein neighboring pinholes laying substantial in a plane perpendicular to the axial axis and being near one of the ribs of the polygonal measuring cavity are spaced further apart than neighboring pinholes laying substantial in the plane perpendicular to the axial axis and laying substantial in the middle between two adjacent ribs.

Regarding dependent claim 67, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the pinholes situated relatively close to the axial ends of the measuring cavity are at an angle to the normal of the wall segment in the direction of the absolute centre of the measuring cavity.

Regarding dependent claims 68-69, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the pinholes are distributed over the wall of the measuring cavity such that for two peripherally neighboring pinholes (pinholes separated in a direction perpendicular to the axial axis) one axially neighboring pinhole is situated halfway $50 \pm 20\%$ between the two peripheral neighboring pinholes.

Regarding dependent claims 70-71, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein a detection means D_i situated behind a pinhole P_i comprises at least two detection means segments placed at an angle in relation to one another and out of plane, such that radiation from pinhole P_i reaching the detection means segment will on average have a more perpendicular line of incidence than if they were placed in a plane wherein $i = 1, 2, 3, \dots, n$ wherein n is the total number of pinholes.

Regarding dependent claim 72, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein a detection means D_i situated behind a pinhole P_i has a curved surface, such that the radiation from pinhole P_i will on average have a more perpendicular line of incidence onto each part of the detection means D_i wherein $i = 1, 2, 3, \dots, n$ wherein n is the total number of pinholes.

Regarding dependent claims 79-80, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the pinholes are distributed over the wall of the measuring cavity such that for two peripherally neighboring pinholes one axially neighboring pinhole is situated halfway $\pm 20\%$ between the two peripheral neighboring rectangular pinholes.

Regarding dependent claim 81, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein a detection means placed behind a pinhole is a detector array.

Regarding dependent claim 82, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the measuring cavity has a polygonal cross section and the wall is divided into wall segments having pinholes.

Regarding dependent claim 83, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein pinholes that are located nearer the ribs of the polygonal measuring cavity are at an angle to the normal of the wall segment in the direction of the centre line of the polygonal measuring cavity.

Regarding dependent claim 84, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the pinholes near one of the ribs of the polygonal measuring cavity are spaced further apart than pinholes nearer to the middle between two adjacent ribs.

Regarding dependent claim 85, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the pinholes situation nearer

the axial ends of the measuring cavity are at an angle to the normal of the wall segment in the direction of the absolute centre of the measuring cavity.

Regarding dependent claim 86, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein at least 3 transversally spaced from one another and axially nearest neighboring pinholes P_i are axially staggered in relation to one another.

Regarding dependent claim 87, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein a detection means D_i situated behind a pinhole P_i comprises at least two detection means segments placed at an angle in relation to one another and out of plane, such that radiation from pinhole P_i reaching the detection means segment will on average have a more perpendicular line of incidence than if they were placed in a plane.

Regarding dependent claim 88, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein a detection means D_i situated behind a pinhole P_i has a curved surface, such that the radiation from pinhole P_i will on average have a more perpendicular line of incidence onto each part of the detection means D_i .

Regarding dependent claim 89, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the cavity wall may be arranged to be replaceable by another cavity wall comprising other dimensions and/or other patterns of pinholes and/or pinholes with other dimensions.

Regarding dependent claim 90, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the blocking wall may be arranged to be replaceable by another blocking wall comprising other dimensions and/or other patterns of openings and/or openings with other dimensions.

Regarding dependent claim 91, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the distance between neighboring planes is not smaller than 0.03 and preferably 0.05 times the distance between neighboring pinholes within any of each planes.

Regarding dependent claim 92, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the distance between neighboring planes is 0.03-0.98 and more preferably 0.05-0.77 times the distance between neighboring pinholes within any of such planes.

Regarding dependent claim 93, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the pitch of the helix is not smaller than 0.03 and preferably 0.05 times the distance between neighboring pinholes laying on the helix.

Regarding dependent claim 94, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein the pitch of the helix is 0.03-0.98 and more preferably 0.05-0.77 times the distance between neighboring pinholes laying on the helix.

Regarding dependent claim 95, the prior art, as stated supra, does not disclose or fairly suggest tomographic imaging apparatus wherein at least one of the baffles is

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retractable so that, in use, the retracted baffle will not be illuminated by the radiation from the cavity.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faye Polyzos whose telephone number is 571-272-2447. The examiner can normally be reached on Monday thru Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FP

OTILIA GABOR
PRIMARY EXAMINER

